CLAIMS

1. An isolated polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 3;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 3 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID No. 3;

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

2. An isolated polynucleotide encoding a polypeptide comprising:

a) a signal peptide comprising the sequence of SEQ ID No. 4 ;

b) a proregion comprising the sequence of SEQ ID No. 5 ;

c) a mature peptide comprising the sequence SEQ ID No. 6 ;

d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 4, SEQ ID No. 5, or SEQ ID No. 6; or

e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO. 5, or SEQ ID NO. 6;

wherein said signal peptide causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said proregion inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID No. 4 causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said fragment of SEQ ID No. 5 inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5; and

wherein said fragment of SEQ ID No. 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO 6, antimicrobial activity, and cytotoxic activity.

3. An isolated polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 6;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 6 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID No. 6

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

4. The isolated polynucleotide according to claim 1, wherein said polynucleotide encodes a polypeptide fragment comprising at least 15 consecutive amino acids.

5. The isolated polynucleotide according to claim 1, wherein said polynucleotide encodes a polypeptide comprising the sequence of SEQ ID No. 3.

6. The isolated polynucleotide according to claim 1, wherein said polynucleotide encodes a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 3.

7. The isolated polynucleotide according to claim 1, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the polypeptide of SEQ ID No. 3.

8. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a signal peptide comprising the sequence of SEQ ID No. 4.

9. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a proregion comprising the sequence of SEQ ID No. 5.

10. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a mature peptide comprising the sequence of SEQ ID No. 6.

11. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising an amino acid sequence at least

90% identical over the full length to the amino acid sequence of SEQ ID No. 4, SEQ ID No. 5, or SEQ ID No. 6.

12. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the signal peptide comprising the sequence of SEQ ID No. 4.

13. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of a proregion comprising the sequence of SEQ ID No. 5.

14. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of a mature peptide comprising the sequence of SEQ ID No. 6.

15. The isolated polynucleotide according to claim 3, wherein said polynucleotide encodes a polypeptide comprising the sequence of SEQ ID No. 6.

16. The isolated polynucleotide according to claim 3, wherein said polynucleotide encodes a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 6.

17. The isolated polynucleotide according to claim 3, wherein said polynucleotide encodes a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID No. 6.

18. The isolated polynucleotide according to claim 3, wherein said polynucleotide encodes a polypeptide comprising at least 15 consecutive amino acids.

19. The isolated polynucleotide according to claim 2, wherein said polynucleotide encodes a polypeptide comprising at least 15 consecutive amino acids.

20. The isolated polynucleotide according to claim 11, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 4.

21. The isolated polynucleotide according to claim 11, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 5.

22. The isolated polynucleotide according to claim 11, wherein said polynucleotide encodes a polypeptide having an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 6.

23. A vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 3;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 3 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID No. 3;

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

24. A vector comprising a polynucleotide encoding a polypeptide comprising:

a) a signal peptide comprising the sequence of SEQ ID No. 4 ;

b) a proregion comprising the sequence of SEQ ID No. 5 ;

c) a mature peptide comprising the sequence SEQ ID No. 6 ;

d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 4, SEQ ID No. 5, or SEQ ID No. 6; or

e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO. 5, or SEQ ID NO. 6;

wherein said signal peptide causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said proregion inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID No. 4 causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said fragment of SEQ ID No. 5 inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5; and

wherein said fragment of SEQ ID No. 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the

polypeptide of SEQ ID No. 3 or SEQ ID NO 6, antimicrobial activity, and cytotoxic activity.

25. A vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 6;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 6 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID No. 6;

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

26. The vector according to claim 23, further comprising elements ensuring the expression of said polynucleotide in a host cell.

27. The vector according to claim 24, further comprising elements ensuring the expression of said polynucleotide in a host cell.

28. The vector according to claim 25, further comprising elements ensuring the expression of said polynucleotide in a host cell.

29. A host cell transformed with a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 3;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 3 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID No. 3;

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

30. A host cell transformed with a vector comprising a polynucleotide encoding a polypeptide comprising:

a) a signal peptide comprising the sequence of SEQ ID No. 4 ;

b) a proregion comprising the sequence of SEQ ID No. 5 ;

c) a mature peptide comprising the sequence SEQ ID No. 6 ;

d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 4, SEQ ID No. 5, or SEQ ID No. 6; or

e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO. 5, or SEQ ID NO. 6;

wherein said signal peptide causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said proregion inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID No. 4 causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said fragment of SEQ ID No. 5 inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5; and

wherein said fragment of SEQ ID No. 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO 6, antimicrobial activity, and cytotoxic activity.

31. A host cell comprising a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 6;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 6 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID No. 6

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

32. A method of producing a polypeptide comprising culturing a host cell transformed with the vector comprising the polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 3;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 3 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of SEQ ID No. 3;

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3, antimicrobial activity, and cytotoxic activity.

33. A method of producing a polypeptide comprising culturing a host cell transformed with a vector comprising the polynucleotide encoding a polypeptide comprising:

a) a signal peptide comprising the sequence of SEQ ID No. 4 ;

b) a proregion comprising the sequence of SEQ ID No. 5 ;

c) a mature peptide comprising the sequence SEQ ID No. 6 ;

d) a polypeptide comprising an amino acid sequence at least 90% identical over the full length to the amino acid sequence of SEQ ID No. 4, SEQ ID No. 5, or SEQ ID No. 6; or

e) a fragment comprising at least 10 consecutive amino acids of SEQ ID NO: 4, SEQ ID NO. 5, or SEQ ID NO. 6;

wherein said signal peptide causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said proregion inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5;

wherein said mature peptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity;

wherein said fragment of SEQ ID No. 4 causes intra- or extracellular secretion of a polypeptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 4;

wherein said fragment of SEQ ID No. 5 inactivates the precursor form of the defensin molecule and/or provides a support for the acquisition of the active conformation of the mature peptide and/or is recognized by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO: 5; and

wherein said fragment of SEQ ID No. 6 has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID No. 3 or SEQ ID NO 6, antimicrobial activity, and cytotoxic activity.

34. A method of producing a polypeptide comprising culturing a host cell transformed with a vector comprising a polynucleotide encoding a polypeptide selected from the group consisting of:

a) a polypeptide comprising the sequence of SEQ ID No. 6;

b) a polypeptide comprising an amino acid sequence at least 80% identical over the full length to the amino acid sequence of SEQ ID No. 6 ; and

c) a polypeptide comprising a fragment of at least 10 consecutive amino acids of the sequence of SEQ ID No. 6

wherein said isolated polypeptide has at least one biological activity selected from the group consisting of recognition by an antibody specific for the polypeptide of SEQ ID NO: 3 or SEQ ID NO: 6, antimicrobial activity, and cytotoxic activity.

35. The transformed host cell according to claim 29, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

36. The transformed host cell according to claim 30, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

37. The transformed host cell according to claim 31, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

38. The method according to claim 32, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

39. The method according to claim 33, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.

40. The method according to claim 34, wherein said vector further comprises elements ensuring the expression of said polynucleotide in said host cell.